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TIME AND PURE ACTIVITY

BERGSON has raised the question of the relation between time and pure activity and, if I understand him, has ended by identifying the two. He has done this, however, by discrediting the metaphysical worth of the physicist's notion of space and time; and he has relied overwhelmingly for his proofs upon the methods and material of introspective psychology. This is all very disconcerting to the present writer; for to me the result of Bergson's inquiry is excellent, while the entire method is exceedingly bad. I am persuaded that, in some sense, time is pure activity. But I am no less strongly convinced that nobody can prove it by any introspective device or discovery. This successful failure of Bergson's argument prompts me to ask whether the fact at which he is driving can not be exhibited clearly in terms of common-sense—particularly in terms of space and time, as these are ordinarily understood. The following account appears to accomplish this. It is deliberately couched in the most unphilosophical language and employs a frivolous example drawn from contemporary fiction. My aim in choosing this is simple. I wish to avoid every possible refinement of thought in my premises. I wish to keep as close to the normal man's ideas of space and time as I can. If, from such naïve opinions, all of which are, according to Bergson, the products of practical conceptual thinking, I can draw the implication that time is pure activity, I shall, at least, have shown that Bergson's psychology and his method can be wholly divorced from his metaphysical conclusions. Incidentally, I hope to clear the way for reinvestigating the relation of time to consciousness.

1. *Unfree Mobility in Time.*—The sharpest possible contrast between space and time appears in the nature of the mobility occurring in each. In space there is some kind of free mobility. In time there is not. We need not here digress into the field of pure geometry for a glance at the extreme sort of free mobility which is there postulated. We need only consider the simple and apparent variety encountered everywhere in nature. An object can move from the position P to the position P'; it can move back again to P; and in doing this the spatial conformation of the object need not be altered. Or, more precisely, *if* it is altered, it is not by virtue of simple displacement, but through some special physical force, such as electrical tension, heat, or the like. Stated in its most generalized form, this free mobility means that the space characters of a figure are not functions of the figure's position with reference to the rest of space.

In time all is otherwise. You can not leap back into the thirteenth century, nor can a man of that period hop into our own. Even though you allow yourself to be changed by the leap, you can not take it; and thus time shows itself to be different from space in two respects. In it there is no free mobility; *in it there is, moreover, no mobility of the individual entity distinct from the mobility of the total field.* To phrase this last statement differently, a thing moves in time only by moving with all other things; if all are at the moment t, it can not move with respect to them in such a manner that it enters a moment t' which they will enter at some other moment t''.

2. *Is Unfree Mobility in Time a Mere Physical Accident, Like Our Inability to Fly to the Moon?*—History has repeatedly shown how easy it is for the sagest persons to declare that a certain thing is impossible "by the very nature of things." It was held impossible "by the very nature of things" that the earth should be a sphere, with people on the other side walking, heads downward. It was held impossible "by the very nature of things" that a man could exist without the innate idea of "God." And yet men later found that the world was round, and that nobody has an innate idea of "God," and many South American Indians have no such idea, innate or otherwise. Now, may it not be that our inability to leap into the fiftieth century, A.D., seems impossible to us, merely because of certain prejudices we entertain or certain facts and tricks of which we are still hopelessly ignorant? Assuredly, this is not a foolish query. Its answer, whatever that may be, carries immeasurable consequences for metaphysics.

Now, we are safe in declaring a thing impossible only when we can prove it to be self-contradictory.[1] And this, I think, can be shown in the case of free motion through time. To make the proof as simple as possible, I shall present it in the form of a sober criticism of one of the wildest flights of literary fancy which that specialist in wild flights, H. G. Wells, has indulged in. I refer, of course, to his amusing skit, "The Time Machine."

3. *The Time Machine: Where It Breaks Down.*—The time machine, like all products of supreme inventive genius, was a remarkably simple affair. A few rods, wires, some odd glass knobs,—nothing more! The inventor mounted it, turned a lever, and the machine started to move—but not in space. It remained in the little room where it had been built; but it moved through the hours and days and years, now fast, now slow, according to the traveler's whim at the lever. At last the traveler stopped its mysterious mechanism, and the car came to rest in an era many hundred thousands of years in the future. And the tourist of aeons experienced many strange things.

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[1] Please note that I am not saying that only self-contradictory things are impossible! Many things may, for all I know, be impossible through some other circumstance. I believe, though, that, whenever we do not know all the circumstances influencing an event, we do rashly to pronounce the latter impossible on any other grounds than pure self-contradiction.

But the strangest of all things which he must have experienced are not even mentioned by the ingenious Mr. Wells. What happened to the traveler after reaching the future were vastly less odd than what must have befallen him *en route.* As you follow the account I shall give of his trip, please bear in mind that Mr. Wells's hero is a real traveler; he goes to the future, he does not merely have a vision of it. The distinction between traveler and seer is crucial, not only for Mr. Wells's story, but in even greater measure for the metaphysician who studies the serious under side of the fantasy.

4. *Some Hardships of Travel on the Road to To-morrow.*—The time traveler passes through the years as a man would ordinarily pass through space; that is, he traverses the stretches, he goes from "next" to "next." But, when he arrives at the far-off geological epoch when the sun is growing cold, he is still the same man in all his personal history. He is not a day older. His clothes are the same, his thoughts are the same, his own private past is the same as at the outset. How is this possible? If he has passed through a hundred thousand generations, why isn't he a hundred thousand generations old?

The answer to this question is clearly given in the story. The centuries flicker past like fence posts as seen from a swift express train. *In other words, it takes the tourist a very little time to traverse a great deal of time.* And here we come upon the first contradiction in the whole proceeding. Time must be regarded as moving at a certain rate in time: and this is indispensable to the time machine, inasmuch as forward or backward motion in time is possible only if at least two objects or systems may have different rates of displacement or change in time. Let us put this case quite directly. *If the tourist spent a million years in reaching an hour a million years from his starting-point, he would not be leaping the centuries. And his time machine would not be doing anything. The achievement becomes genuine and noteworthy only when he manages to reach a date sooner than it will be reached in the natural course of events. But to do this time itself must have a time-velocity which the time machine can exceed. And this is a pure contradiction: for velocity is a ratio within the time continuum.*

Perhaps a simpler way of describing this situation would be to press the analogy between the traversing of time and the traversing of space. To traverse a million years in a few days is exactly like traveling a thousand miles in one inch. Let us suppose the time-traveler sets out at midnight of New Year's Eve, 1914, journeys to January 1, 2914, stays there a few hours, and then returns in time to attend a play in New York on January 10, 1914. What does this mean, precisely? It means that the whole 2,000 years (1,000 forward plus 1,000 backward years) is no greater than its own part, 10 days. The 2,000 years "stretch out" and endure no longer than does a small fraction of them. Now, is not this a pure self-contradiction, on a par with the proposition that you or I can go from New York to Pekin without moving farther than our own front door?

There remains another hardship which travelers into the morrow would encounter on the time machine. But this one, I confess, is not easily reduced to a pure self-contradiction. Nevertheless, I shall state it as precisely as I can, for I believe that there is a genuine absurdity in it.

The traveler remains motionless in space while he races across the centuries. This, of course, is meant to be analogous to motion in one dimension, but not in another. Thus, a point is motionless with respect to all other points in a given plane, but the plane as a whole may be in motion. Mr. Wells would have us imagine a man at rest in the space dimensions, but moving with respect to the time of that space field. Very well! Let us do our noblest to play the game. What do we find? Something very disconcerting indeed. Something which, I fear, will make time-touring very unpopular among sedate people. The traveler flies, not through an abstract time (like the "pure space" of the geometer). *He flies through real time. But real time is history: and history is the course of physical events. It is the sequence of activities, physical, physiological, political, and otherwise.*

Proof? Why! At the journey's end, our traveler looks upon strange races, listens to incomprehensible speeches, contemplates a sadly transformed world. The hills have suffered a change, under the beatings of innumberable gales and floods. The leisure classes show the effects of a million years of pampering, while the laborers have lapsed into a strange brutishness that only a million years of oppression could bring. In brief, a million years have truly passed; the world and all the things in it are by that much older, that much wiser, that much sadder, that much different.

But now appears the hardship in time-travel. If real time is the course of natural events, then the tourist who traverses that time traverses history; and that means that he traverses a world of change, a world in which nations rise and fall, tempests leap up, destroy, and subside, houses are built with toil and burned in the frenzy of sudden war, and so on. *Now we must suppose that all these physical changes take place in the tourist's surroundings: and we must assume that the tourist retains his own body. But how can he? For these future changes will take place in the spot his body occupies: and if his body is projected into the time of those changes, it will be affected by those changes profoundly.*

That this is far from being a whimsical objection will appear if we allude to a concrete situation. The traveler sets forth January 1, 1914. He is in his workshop at home, and there he will remain.[2] But he will move forward in time. He starts. Soon he reaches January 1, 1920. By this time, his wife has decided that he has been killed; so she sells the house and goes back to her mother's. The buyer of the house tears it down; on April 1, the wreckers have ripped off the plaster and are over-throwing the brick walls with long crowbars. A ton of bricks is heaped up on the spot where once the vanished traveler's workshop stood. But where, oh where, is the traveler? If he remains in the same place, he is surely beneath the ton of bricks and so is his precious machine. If he is truly traversing time, he must be there at the given instant. Hence his time and place coincide with the time and place of the debris; and this, we aver, is most uncomfortable for the tourist. He is fairly interpenetrated with bricks. And similar inconveniences will occur all along the line of march.

5. *Conclusion.*—All this sounds very foolish; but I think it conceals a very genuine and important fact that must weigh heavily in the great controversy over time which has been going on of late. It is simply this: *Real time is so completely integrated with physical space and physical entities that every transition from a T to a T' involves a transition from an S system to an S' system. Motion across space is impossible without motion across time: and, vice versa, motion across time is impossible without motion across space.* If a man wishes to travel a mile, he must travel a mile and in some time. If a man wishes to cross a year, he must cross a year and, in so doing, pass through a number of space forms and systems (of his own and of the environment).

Here, I think, we find the correct meaning of Bergson's theory that time is pure activity. It is not the precise meaning that Bergson himself reads into the words; but it is very close to it. And it is simply verifiable by a common-sense analysis of familiar facts. We find that time is just as truly a "part" of the physical course of events as matter is. It is not a unique, characterless void in which planets spin and iron rusts and grass grows. It *is* the planet, the iron, the grass, and all other physical things. The atom that has volume and mass also *has* time. To say that the atom is "in" time is to obscure a most important fact, namely, that its career is the thing itself.

This view of time and space carries with it a host of peculiar consequences. Not the least of these is one regarding foresight and hindsight. We can not travel into the past and the future on Mr. Wells's time machine. Yet we do somehow deal with past and future, every day of our lives. How, now, must we describe this operation? Past and future circumstances are constantly determining our present conduct. Plainly, they can not do this in precisely the same manner as the heat of the sun now influences the growth of plants. It is a much more elusive process. I hope to consider it soon and to show, in an entirely untechnical manner, that the past-future determinants of the present must be related to one another and to the present in some ''medium'' or ''continuum'' other than that of either ''space or time.''

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[2] Let us waive the embarrassing fact that the traveler who moves only in time and not at all in space would suddenly find himself strangling in the empty ether, while the earth went hurtling away from beneath him.

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REVIEWS AND ABSTRACTS OF LITERATURE

Le Relativisme Philosophique chez Georg Simmel. A. MAMELET. Paris: Félix Alcan. 1913. Pp. ix + 214.

This book by Professor Mamelet, of the Lycée de Belfort, is a republication of a series of articles which first appeared in the *Revue de Metaphysique et de Morale.* Although it " does not pretend to be a complete and definitive *exposé* of the work of M. Simmel," it may well be accounted such. Any review of it has the disadvantage of being a review of a review of an entire philosophic system. It is quite impossible to do justice to Simmel, whatever one may say of the work of Mamelet; and it must be said at once that the latter's work appears to have been done with extreme care, accuracy, and enthusiasm. Indeed, it is a little surprising to find a Frenchman so enthusiastic over the work of a German who, whatever his merits, has not thus far appeared to demand a place among the immortals.

Mamelet divides the writings of Simmel into two periods, the first of which, 1890–1892, saw the publication of " Ueber soziales Differenzierung " and " Einleitung in die Moralwissenshaft." The second period from 1900 to 1910 included the " Philosophie des Geldes," perhaps the best known of his works in America, the " Vorlesungen ueber Kant," " Religion," " Schopenhauer und Nietzsche," the " Probleme der Geschichtsphilosophie," " Soziologie," and the " Hauptprobleme der Philosophie," besides many review articles.

Some kind of key to the book may be given in these words: " Simmel finds in Kant the germ of his relativistic theory which makes knowledge (*connaissance*), like action, move between ideal limits, never attained in fact, *viz.*, pure experience and the pure *a priori,* and which, instead of representing the mind (*esprit*) either as a pure receptivity or as a pure contemplation, makes of it a living, synthetic activity, oscillating between these correlative poles " (p. 90).

The chapters of the book are entitled, " The Philosophic Work of Georg Simmel," " The Relativity of Moral Ideas According to the *Einleitung,*" " The Relativity of Economic Value," " The Relativity of Knowledge in